

Name _____

STUDY GUIDE for Midterm

Ch 1 Introduction: Experimental Design and Characteristics of Living Things

1. What are the 8 criteria that all living things must meet?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

2. Give 3 examples of how organisms maintain homeostasis.

- 1.
- 2.
- 3.

Ch 2: Chemistry of Life

3. Name the monomers that make up each of the following polymers:

- Nucleic acids _____
- Proteins _____
- Carbohydrates _____
- Lipids _____

4. Explain at least one function of each of the following macromolecules.

- Carbohydrates
- Lipids
- Nucleic Acids
- Proteins

Ch 7: Cell Structure and Function

5. Name 4 structures that are found in ALL cells.

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-
-
-

6. Unicellular organisms like bacteria that lack a **nucleus** are called _____. Protists, fungi, plants, and animals are considered _____ because their DNA is enclosed within a **nucleus**.

7. Diffusion, which is an example of _____ transport, is the movement of a solute from _____ to _____ concentration and therefore does NOT require _____. Active transport moves materials from _____ to _____ concentration and therefore DOES require _____.

Ch 8 and 9: Photosynthesis and Respiration

8. Photosynthesis converts _____ energy to _____ energy. The reactants of this energy transforming reaction include _____, _____, and _____ while the products include _____ and _____.

9. _____ releases energy from food in the presence of oxygen. The reactants of this energy transforming reaction include _____ and _____ while the products include _____, _____, and _____.

10. In which organelle does each of the following energy conversions primarily occur?

- Photosynthesis _____
- Cellular respiration _____

11. Explain at least three similarities and three differences between photosynthesis and cellular respiration.

Similarity

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-
-

Differences

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-
-

Ch 10: Cell Growth and Division

12. Explain 5 specific differences between mitosis and meiosis

Mitosis

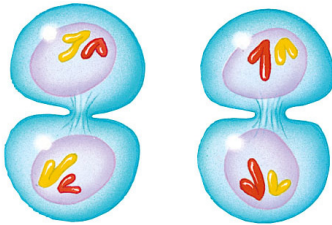
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Meiosis

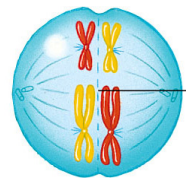
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13. Label each cell with correct phase of meiosis. Be sure to include I or II for each.

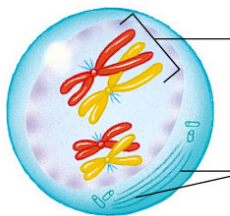
A. _____



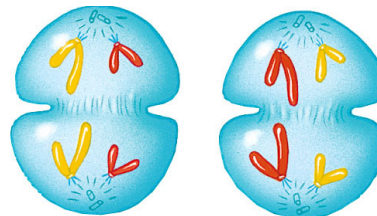
B. _____



C. _____



D. _____



Ch 11: Genetics

14. Black coat color (B) in guinea pigs is dominant over white coat color (b).

Cross two heterozygous black guinea pigs.

♂ _____ X _____ ♀

GENOTYPE RATIO: _____

PHENOTYPE RATIO: _____

Probability offspring has genotype BB: _____

Probability offspring has genotype Bb: _____

Probability offspring has genotype bb: _____

Probability offspring has black fur: _____

Probability offspring has white fur: _____

15. In mice, running (R) is dominant over waltzing (r), and black hair (B) is dominant over brown (b).

Cross a heterozygous running, brown mouse with a heterozygous running, homozygous black mouse

♂ _____ x _____ ♀

Phenotypic ratio:

Probability offspring is
running AND black: _____

waltzing AND black: _____

16. In four o'clock flowers, red (R) is **incompletely dominant** over white (W). What cross would result in a phenotypic ratio of 1 red: 2 pink: 1 white? Determine the genotypes AND phenotypes of the parents.

Show a Punnett square to support your answer.

Genotypes of parents _____ x _____

Phenotypes of parents _____ x _____

17. In chickens, black feathers (BB) are **codominant** with white feathers (WW). The heterozygous genotype (BW) results in erminette, or speckled black AND white feathers. What cross would result offspring that are all erminette? Determine the genotypes AND phenotypes of the parents. Show a Punnett square to support your answer.

Genotypes of parents _____ x _____

Phenotypes of parents _____ x _____

18. Human blood types are an example of **multiple alleles** that also display **codominance**. Cross a male with type O blood with a female with type AB blood. Complete the following.

♂ _____ x ♀ _____

What is the probability they would have a child with the following blood types:

A _____

B _____

AB _____

O _____

19. Colorblindness is a **recessive sex-linked** condition.

Using (N) for normal vision and (n) for colorblind,

cross a normal male with a heterozygous normal female. ♂ _____ X _____ ♀

Probability of having a child who is:

Normal _____

Colorblind _____

Probability a male offspring would be:

Normal _____

Colorblind _____

Probability a female offspring would be:

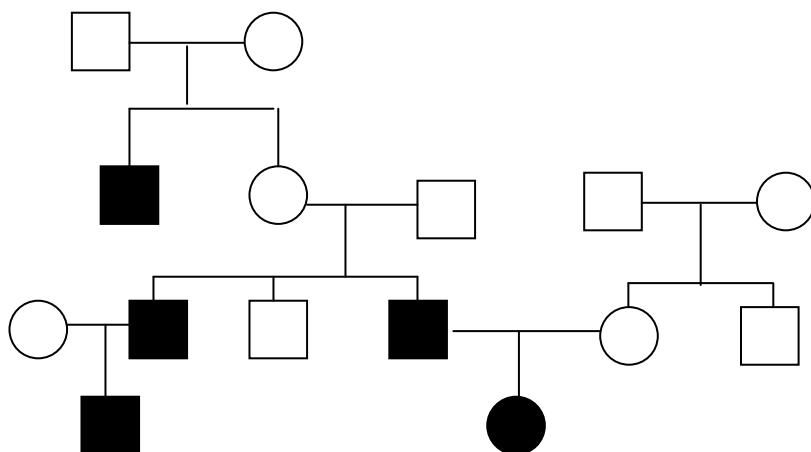
Normal _____

Colorblind _____

Genotypic ratio:

Phenotypic ratio:

20. Below is a pedigree tracing the inheritance of colorblindness, a **recessive sex-linked** trait. Using N or normal and n for colorblind, give the correct genotype for the individuals listed.



A _____

B _____

C _____

D _____

E _____

F _____

G _____

H _____

I _____

J _____

K _____

L _____

M _____

N _____

O _____